2012 TH-57 NATOPS

Change Summary

TH-57 NATOPS Change summary

- TH-57 NATOPS Conference
  - Conducted May 2012
  - Approx. 30 attendees from TRAWING FIVE, NAVAIR, CNATRA, Bell, Naval Safety Center, Fidelity, L-3, HX-21 and CRM CMD School
  - Discussed approx. 60 NATOPS changes that were submitted since the previous publication of the 2010 TH-57 NATOPS Manual.

- Major changes presented in the brief; minor word changes not listed.

Preface

- Warning - Explanatory information about an operating procedure, practice, or condition, etc., that may result in injury or death, if not carefully observed or followed.

- Caution - Explanatory information about an operating procedure, practice, or condition, etc., that may result in damage to equipment, if not carefully observed or followed.

- Note - Explanatory information about an operating procedure, practice, or condition, etc., that should be emphasized.

CH 2

- 2.8 Fuel Supply System
  - The fuel filter assembly and single- or dual-element engine-driven fuel pump, which operates at 700 +/- 50 psi, are integral units mounted on the aft left end of the engine.

- 2.11.3 Directional Control Pedals
  - **Note -** The pedal adjusters should not be set full aft as the pedal force trim switch will disengage the yaw force trim and the AFCS yaw axis (TH-57C).

CH 4

- Fig 4-3 Instrument Markings
  - Note – 22 VDC Minimum for battery start

- 4.4 Rotor Limitations
  - POWER ON: Minimum Nr is 97 percent. Maximum continuous Nr is 100 percent.
  - POWER OFF: The normal operating range is 90 to 107 percent Nr. Transient allowable Nr is 107 to 114 percent for 5 seconds.

CH 6

- NATOPS Brief
  - 6.1.6.1 Conduct of Flight
    - 11. Notice to Airmen (NOTAMS).
  - 6.1.6.3 Emergencies
    1. Actual
    2. Simulated
    3. Inadvertent IMC
    4. Ditching/emergency landing
    5. Emergency egress

CH 7

- Preflight Inspection
  - 7.6.2 Cockpit
    - 5. BAT Switch – ON. Check minimum 22 Vdc. If performing a battery start, check minimum 22 Vdc, if voltage is less than 22 Vdc, plan for GPU assisted start; if battery voltage is less than 18 Vdc, maintenance action is required
- 7.9 Start
  - 7. Engine Start – Complete
    - f. Twist grip – flight idle at a minimum of 12 percent Ng.
- 7.10 Pretakeoff
  - 16. Twist grip – Full open.
    - Caution – When accelerating the rotor system during the initial rotor engagement or after power-off maneuvers, exceeding 40 percent torque may induce engine chugging which may induce a compressor stall.

CH 7

- Post Takeoff Checklist – Removed
- Health Indicator Test (HIT) Checklist – Removed

CH 11

- Flight Characteristics
  - Recovery procedures moved to CH 14 for the following:
    - Uncommanded right roll during flight below 1g
    - Vortex Ring State
    - Rotor blade stall

- Loss of Tail Rotor Authority
  - Amplifying information explaining the differences between Loss of Tail Rotor Authority (LTA) and Loss of Tail Rotor Effectiveness (LTE).

CH 12

- Battery HOT
  - BAT Switch – OFF. Land as soon as possible

  Note – Switching the Main Battery Off opens the main battery relay, which causes the “STBY BATT ON” light to illuminate. As long as the ESS No. 1 bus is being powered normally, the standby battery will not be depleted.

- Battery TEMP
  - BAT Switch – OFF. Flight may be continued.

  Note – Same as above

CH 14

- Compressor Stall
  - Compressor stalls can very in severity, duration and recoverability. A compressor stall may present itself as a single pop, a sustained rumble or a series of loud bangs. The engine instruments may fluctuate, spike, or exceed limits, and the aircraft may become uncontrollable. As a result, recovery and subsequent landing will vary based on the severity of the stall, aircraft controllability and pilot experience. Often a reduction in collective will clear the stall. However, twist grip reduction may be required. Depending on time, altitude and suitability of the landing site, the pilot may attempt to increase the twist grip after the stall has cleared to effect a safe landing.

CH 14

- Compressor Stall cont.
  - Note – Bleed valve flutter is a mild pop or series of pops and may occur while opening the twist grip. This bleed valve flutter is considered normal as the bleed valve is operating as designed. The bleed valve flutter may cause slight momentary TOT and torque changes. Any additional indications should be reason to classify this as a compressor stall.
  - Indications of a Compressor Stall:
    - Popping, rumbling or loud banging
    - Abnormal vibrations
    - Rapid rise or fluctuations in TOT
    - Torque fluctuations with yaw kicks
    - Ng fluctuation
    - Loss of power

CH 14

- Compressor Stall Procedures:

  *1. Collective – Reduce

  *2. ENG Anti-ice switch – ON

  *3. Cabin Heat Valve – ON

  If compressor stall persists and aircraft is uncontrollable:

  *4. Autorotate

  *5. Twist grip – Flight Idle

  Note – Depending on the time, altitude and suitability of the landing site, the pilot may attempt to increase the twist grip after the compressor stall has cleared to effect a power-on landing. Increasing the twist grip may re-aggravate the compressor stall.

  If compressor stall clears or aircraft is controllable:

  *6. Land as soon as possible.

CH 14

- Underspeeding Nf/Nr

  If the pilot inadvertently rotates the twist grip out of the FULL OPEN position, it will create conditions that resemble underspeed indications. If the aircrew determines these conditions were induced by the pilot, flight may be continued once conditions return to normal.

  Procedures

  *1. Collective – Lower as required to maintain a minimum of 90% Nr.

  *2. Twist grip – Full open.

  *3. GOV RPM – Full increase

  If underspeed persists:

  *4. Check power available with Nr in limits

  If power is not sufficient:

  *5. Autorotate

  If power is sufficient:

  *6. Land as soon as possible.

CH 14

- Power Required Exceeds Power Available

  Indications:

  Uncommanded descent with torque at maximum available

  Rotor droop

  Loss of Tail Rotor authority

  Procedures:

  *1. Collective – Lower as required to maintain a minimum of 90% Nr.

  *2. Twist grip – Full open

  *3. Angle of bank – Level the wings

  *4. Airspeed – Adjust to 50 KIAS (minimum power required airspeed)

  *5. Jettison – As required

  If impact is imminent:

  *6. Level the aircraft to conform to terrain.

  *7. Cushion the landing.

CH 14

- Dynamic Rollover (New Emergency Procedure)

  Indications:

  Excessive roll rates about a pivot point when lift approx equals weight

  Lateral control becomes sluggish or ineffectual

  Cyclic contacts lateral stop

  Procedures:

  *1. Collective – Reduce to stop the roll

  *2. Cyclic – Neutral

  Warning: With one skid on the ground and thrust approximately equal to weight, if the lateral control becomes sluggish or ineffectual, contacts the lateral stop, or bank angle or roll rates become excessive (15 or 10 degrees per second respectively), the aircraft may roll over on its side.

CH 14

- Engine Overspeed

  Procedures:

  *1. Twist grip – Reduce (to maintain Nf /Nr in operating range)

  *2. Collective/Twist grip – Coordinate

  Note – The Nf overspeed must be controlled by coordinating collective and twist grip.

  *3. Land as soon as possible.

CH 14

- Engine Restart in Flight
  - *1. Autorotate
  - *2. Starter – Engage
  - *3. Twist grip – Check, Full open
  - Note: The twist grip can be left in the full open position since fuel flow during the start will be on the normal acceleration schedule.
  - If light-off does not occur:
  - *4. Twist grip – close
  - Note: If time and altitude permit, multiple attempts can be made to perform a normal start.
  - If light-off occurs:
  - *5. Twist grip – Full open
  - *6. Land as soon as possible.

CH 14

- Main Drive Shaft Failure

  *1. Autorotate

  *2. Twist grip – Adjust, if necessary, to maintain Nf in operating range

  Warning: The engine must continue to operate to provide tail rotor drive. Tail rotor effectiveness may be lost if Nf is allowed to go below 80 %.

  Note: The Nf governor should bring the Nf back to 100% with the twist grip full open.

  When on the deck:

  *3. Emergency shutdown - Complete

CH 14

- Mast Bumping

  Indications:

  Sharp, two-rev knocking

  Procedures:

  *1. Establish positive g load and/or balanced flight (as required)

  *2. Land immediately

  Note: If mast bumping occurs on the deck, maintenance action is required prior to flight.

CH 14

- Main Generator Failure
  - Multiple changes to Notes and Warning

- Electrical Fire – Unknown Origin

  *1. BAT Switch – Off

  © *2. STANDBY GEN Switch – Off

  © *3. If in VMC, STBY ATT IND Switch – Off

  No changes to remainder of procedure.

- Hydraulic System Failure
  - Same procedure, all non-memory items

CH 14

- Complete Loss of Tail Rotor Thrust

  In a hover:

  *1. Twist grip – Flight idle

  *2. Cyclic – Eliminate drift

  *3. Collective – Increase to cushion landing

  Transition to forward flight or hover/air taxi:

  *1. Twist grip – Flight idle

  *2. Cyclic – Eliminate sideward drift

  *3. Collective – Increase to cushion landing

CH 14

- Complete Loss of Tail Rotor Thrust

  At Altitude:

  *1. Autorotate

  If yaw is not controllable:

  *2. Twist grip – Flight idle immediately

  If yaw is controllable:

  *3. Continue powered flight and set up to a suitable landing area at or above minimum rate of descent autorotational airspeed.

  Warning – Autorotation may be the safest option. Attempting to control a loss of tail rotor thrust in powered flight requires considerable skill and may result in loss of aircraft control.

  *4. Autorotate

  *5. Twist grip – Rotate to flight idle prior to touchdown.

CH 14

- Single Instrument Indications

  If a DC powered instrument fails, check for a popped circuit breaker. If operation is restored, by resetting the circuit breaker, flight may be continued.

  - Torquemeter
    - If the torquemeter is unusually low or falls to zero with a corresponding digital readout, it is probable that the torque line has ruptured. A restrictor fitting in the wet line will slow the rate of engine oil loss, but will not stem the flow.

    *1. Monitor engine instruments

    *2. Land as soon as possible

CH 14

- Single Instrument Indications

  - Torquemeter

    The torquemeter incorporates a transducer between the wet line and the gauge. If the needle falls to zero and the digital readout is extinguished, the cause is a loss of electrical power to the indicator.

    1. Monitor engine instruments
    2. Check TRQ circuit breaker – In

    If circuit breaker resets:

    3. Flight may be continued.

    If circuit breaker was not popped or does not reset:

    4. Land as soon as practical

CH 14

- Single Helicopter Inadvertent IMC Procedure
  1. Establish an instrument scan and balanced flight
  2. Turn away from and/or climb above obstacles of immediate concern.
  3. Regain VMC if able.

  Warning – Entry into an unusual attitude has proven to be likely during Inadvertent IMC entry. This is due to spatial disorientation resulting from bank angle control reversal error and the psysiological tendency to apply aft cyclic and decelerate upon entry.

  If unable to regain VMC:

  4. ATC notify and gain IFR clearance if necessary.

CH 16

- Emergency Ground Egress
  - Same procedure, all memory items

CH 20

- Cockpit Management
  - Operational Risk Management
  - Crew Resource Management
  - Aircrew Authority and Operational Positions
  - Checklist Procedures
  - Mission Specific CRM Procedures